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FONDO EUROPEO DE DESENVOLVEMENTO REXIONAL PO FEDER Galicia 2014-2020 – Unho maneiro de facer Europ

CiQUS Lecture



Monday, July 18, 2022 12:15 p.m. CiQUS Seminar Room

Link to group website: <u>https://www.gist-foel.net/</u>

Abstract:

Bright-field imaging of nanoscale bioparticles is a challenging task because the light-matter interactions of bioparticles are weak on conventional surfaces due to their low refractive index and small size. Alternatively, advanced imaging techniques, including near-field microscopy and phase microscopy, have enabled visualization and quantification of the bioparticles, but they require the assistance of sophisticated/customized systems and post-processing with complex established algorithms. Here, a simple and fast immunoassay device, Gires–Tournois immunoassay platform (GTIP) is presented, which provides unique color dynamics in response to optical environment changes and thus enables the label-free bright-field imaging and facile quantification of bioparticles using conventional optical microscopy. Bioparticles on GTIP slow down the velocity of reflected light, leading to vivid color change according to the local particle density and maximizing chromatic contrast for high spatial distinguishability. GTIP offers multiscale sensing capability for target analytes with different refractive indices and sizes. The particle distribution and density on the surface of the resonator are readily analyzed through 2D raster-scanning-based chromaticity analysis.

Biosketch:

Young Min Song received a M.S. and Ph.D. in Information and Communications from the Gwangju Institute of Science and Technology (GIST) in 2006 and 2011, respectively, after a B.S. degree in Biomedical Engineering from the Yonsei University in 2004. From 2011 to 2013, he was a postdoctoral research associate in the Department of Materials Science and Engineering at the University of Illinois at Urbana–Champaign. He is currently a professor in the School of Electrical Engineering and Computer Science at the









GIST. Dr. Young Min Song's research interests include advanced optoelectronic devices/systems, multifunctional nanophotonics, and optical healthcare systems. He has published 148 peer-reviewed research articles, including Nature, Science, and Nature Electronics. His Google Scholar profile acknowledges over 8000 citations and an h-index of 37.

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